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ABSTRACT

Communications between college admissions/records officers and the computer center can be enhanced by examining stereotypic ideas about computer personnel and operations, and increasing computer knowledge and the ability to communicate in this language. Barriers can be overcome either by interfacing with a computer-oriented assistant or through increased awareness of computer science methodology and data processing techniques. By having a common frame of reference and knowledge, a higher level of congruence and empathic understanding is possible between staff of the different departments. Admissions/records officers should complete their own inhouse investigation and communicate the problem requiring resolution to computer personnel through the medium of diagrams rather than narrative requests. Keeping records of requests and the basic data on the request is important, and a policy is needed regarding sufficient documentation for each project. Appended materials include a list of computer center functional concerns and key words, flow chart symbols and explanations, information on decision tables, a sample request form, and program documentation checklist. (SW)

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Helping Admissions and Records Officers Communicate with Computer Centers: What Their Needs Are

A Paper Presented at the 1983 Southern Association of Collegiate Registrars and Admissions Officers Annual Conference, held in Fort Worth, Texas on February 13-17, 1983 - Sponsored by the Texas Association of Collegiate Registrars and Admissions Officers. Part II.

BY

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U.S. DEPARTMENT OF EDUCATION
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February 15, 1983

Abstract

This presentation is principally concerned with establishing communications channels and the ability to communicate indepth with computer specialist on both a personal and functional level.

Part II of this presentation attempts to address the functional aspects of this communications process, while tying in the personal components (i.e., a common frame of reference and personal relationship) and concluding summary. These functional aspects were discussed in light of prevailing computer bias and stereotypes, computer center barriers, and the operational areas of the center involving its personnel and processes. In attempting to deal with the aforementioned problems, two avenues of approach were recommended. One dealt with the utilization of a staff specialist (i.e., Computer Oriented User); the second suggested an educational orientation process (for the would-be users) which would heighten their awareness, generate empathy with their counterparts, and create a professional link with the center.

PART II

Helping Admissions and Records Officers Communicate with Computer Centers What Their Needs Are

In the first part of this presentation, we were told which elements make up basic communication (i.e., self concept, self disclosure, clarity of expression, receptive listening, and coping with emotions), and how our communications can be made more effective through the process of developing and maintaining critical relationships (i.e., attitudes, values, beliefs, structure and effective organization).

In this second part, I would like to take this idea a step further, discussing ways and means of enhancing our communications from a more sophisticated or scientific level which includes both indepth communicating and understanding empathically.

In order to expand upon these, I will need to address three specific areas directly related to the computer center operation:

1. Attitudes, values and beliefs (i.e., our stereotypic impression and assumptions).
2. Structure (i.e., transcending their barriers and increasing our functional awareness).
3. Organization (i.e., the process of communicating in their language, using their trade tools).

First, let's take a closer look at those elements pertaining to our attitudes, values and beliefs, which will spill over and influence this basic communication. Two elements in particular have a heavy impact upon communications, they are - receptiveness and emotional deposition, the totality of which culminates in our basic assumptions about this field which in turn reinforce our stereotyped impressions.

Every message we send is affected in part or total by our basic assumptions and mental stereotypes. Let us now consider a few major areas. (Put on computer center overlay)

I ask you - is this picture of a computer center representative of your overall impression of the one located on your campus? Does it seem to be an autonomous entity, somewhat overbearing - intimidating, perhaps even mysterious?!!

It is true that the computer center and our offices share a common ground - both worlds process and store information, and eventually provide an end-product in the form of a report. Though, on the other hand, I believe they are uniquely different in their methodologies and techniques in that the Registrar-person is an artist (e.g., concerned with procedure and aesthetic qualities) while the Computer-person is a scientist (e.g., concerned with logic and numeric quantities).

Most laypersons have a particular reverence for computers and are astonished by tons of data while, on the other hand, they think of most computer personnel (particularly programmer and analyst) as being weird or strange in appearance, suspicious in their thought patterns, and incomprehensible in their speech! Secondly, to this stereotypic impression, many users feel intimidated by these people, because of frequent use of computer jargon (i.e., bits, bytes, word boundaries, ques, logic charts, decision tables, etc.), equipment terminology and incomprehensible space dimensions, not to mention fathom speeds. Third, a more basic difference between the two worlds lies in the fact that users are for the most part oriented to concrete facts, a particular process or subject matter, whereas, computer personnel (i.e., programmers, analyst and managers) are oriented to abstract theories, a general system flow

or specialized hardware characteristics. Fundamentally, users see the computer system as a "means to an end," while computer personnel have elevated it to an "end in itself" ideology. So as you can see, there are a few disparities which must be overcome before meaningful communication can occur.

For any user to "interface" with a computer center, they must be aware of the fact that these centers are highly specialized and decentralized autonomies. In a particular center, one would find that there are usually three management staffs (concerned principally with personnel and logistics), a programming group and an operations group. All more or less operate semi-autonomous of the others.

Now that we better understand some of our preconceived biases and stereotpyes, particularly as they relate to the computer center and its personnel, their ideological orientation and the resulting departmentalized organization, we can return to our discussion and perhaps treat the communication process a little more concretely and decisively in solving some of our more urgent problems.

In order to accomplish this, we'll discuss two aspects of structure: first by breaching computer center barriers via an "interface" spokesperson (a computer-oriented assistant) and secondly, through our own increased awareness of each department's (and staff therein) functional priorities, responsibilities and concerns.

It is hoped that by the end of this presentation you may come to appreciate the value of having a computer-oriented assistant on your staff and, if not feasible, that you yourself would become more knowledgeable of current computer science methodology and data processing techniques in use.

To begin with, and as stated previously in Part I, "the relationship that occurs between a Computer-person and a Registrar-person who happens to be a Computer-person" is in fact inherently different.

People like myself tend to be hybrids: Artistic-scientist or scientific-artist, depending on your dominant orientation. As a case in point, I have two undergraduate degrees in Computer Science, coupled with two graduate degrees in Student Personnel. I have six years of hands-on experience in data processing (i.e., Programmer-Analyst, etc.) combined with five years within Student Personnel (i.e., Admissions, Records, etc.), and for the lack of another term, the end result has been labeled a "Computer-Oriented User."

During this eleven year period, I have been involved with numerous computer brands (e.g., IBM, Honeywell, GE, etc.) to include a variety of hardware and software components which had been combined to support varied institutional missions.

I have also been active in varying levels of administrative sophistication, encompassing varying degrees of automation, both stand-alone units (i.e., word processing/microprocessing) and/or time-sharing systems (i.e., scheduled processing through a computer center).

One can readily see that a Computer-Oriented User (such as myself), with a varied background of experiences, would be rather unique within this setting for most medium sized institutions, particularly with the development of a new system, and such an individual would have several distinct advantages at the very least, over a non-computer-oriented user, those being: First, their ability to serve as an "interface" (or go between) intermeshing the administrative office's needs and wants, with the capabilities and resources of the Computer Center; secondly, to be

a catalyst in "translating" those needs and wants into action plans with computer personnel, and thirdly, to serve as "interpreter" to their office - of those computer center capabilities and resources tapped for utilization, and the results achieved.

My favorite and perhaps a perfect "analogy" of the view of such a Computer-Oriented User can be found in a somewhat popular science fiction oriented graphics movie entitled "TRON." The movie attempts to visualize through special effects the abstract and intangible intra-world of the computer.

The movie, through its combined effects of drama, artistry, sound and light, simulates the functions of computer circuitry, telecommunications processes, user programs, the Central Processing unit, systems controls, systems supervisors, and game functions. The story line portrayed an atomized miniaturized human being, being entrapped and enslaved (in the form of a "user program") within the computer's game world. This particular human just happened to be a computer wiz-kid (i.e., a Systems Analyst). The analogy fits, in that he (the wiz-kid) had a great deal of knowledge of both the real world (i.e., the subject matter) and the computer's world (i.e., the system's internal configuration and its affiliated processes). In the movie, the wiz-kid was triumphant in regaining control over the would-be run away system because of his indepth knowledge of its being. In a similar way, a Computer-Oriented-User can harness a runaway or otherwise idle computer through his or her function as translater or synthesizer, providing accurate, efficient, effective, and long range systems development while, at the same time serving as "checks and balances," - preventing redundant and erroneous data, prolonged delays on report retrieval, data tampering, and above all,

over-automation of the user's manual and electromechanical processes.

It is also hoped that Registrar's and Admissions Offices, through their heightened awareness of the complexity involved, will seek a more determined and thorough knowledge of the functional aspects of this monolithic creature and its internal organs, known as a computer center. Through our awareness (i.e., common frame of reference) and knowledge, we achieve higher levels of congruence and empathic understanding of others. To assist us in a very elementary way, I've prepared a brief functional chart of the internal components of the computer center, as I have experienced them. A copy has been included in your packet for reference.

Let us now take a look at the chart. (Put on functional department overlay). The chart, as you can see, lists alphabetically the key descriptors (i.e., concerns) for each functional area. The cardinal or overriding descriptor for each area is denoted by the asterisk (*). From this extremely condensed list you can easily pick up the principle concerns of each staff member and, from this point you would begin to explore and widen your awareness of their particular function and how it relates to your concerns. This would in effect shift our emphasis, from personalitites to the individual's functional capabilities.

As demonstrated, the breaking down of barriers widens our communications channels, utilizing a staff assistant as an interface person (i.e., Computer-Oriented User) clarifies our messages and locates resources, and our increased functional awareness gives depth to our overall understanding.

The last area to be addressed is perhaps the most technical and by far the least used. It should also be remembered that empathy can only

come from sharing a common ground, idea or feeling with another. So to this end, the organizational process is further enhanced, that is, our ability to communicate at a more sophisticated level in their specialized language - utilizing a few of their trade tools (i.e., charts, tables, symbols, logic and a systematic process). This area of highly specialized communication consists of six components (i.e., thinking, investigating, charting, controlling, follow-up and follow-through). You might note that an entire course could be taught on this one area alone.

Let's now look briefly at each of these components.

1. THINKING:

   Teach yourself to think through your presenting problem in a logical and systematic sequence. Thinking leads to investigating.

2. INVESTIGATING:

   Conduct your own fact-finding study of the presenting problem for indepth understanding of the process and to justify suspected modifications or new acquisitions. The investigation leads to charting of the process.

3. CHARTING:

   Communicate your preliminary thoughts to computer personnel through the medium of diagrams rather than narrative requests. Diagrams present a clear picture of the process, showing data flow, various decision points and information junctures, and what you wish to accomplish or create. The symbols once learned are easily read and followed, and make for a universal exchange of data and purpose. Charting of the problem leads to understanding and identifying solutions. A copy of these symbols, sample chart and table, has been included in your packets for reference.

4. CONTROLLING:

Each set of charts should be transmitted to the computer center personnel under an "administrative request" endorsement through your computer interface person (i.e., Assistant Registrar). This document should state only the bare essentials for processing.

5. FOLLOW-UP:

As each request is transmitted to the computer center, it should be logged or registered and given a unique I.D. number. Basic data on the request should also be entered, so that it can be tracked through the system from start to completion. This record would then provide an excellent "audit trail," not to mention an "aged process register" for periodical research and evaluation of the computer center's responsiveness and error rate. This, in and of itself, could constitute a performance study.

6. FOLLOW-THROUGH:

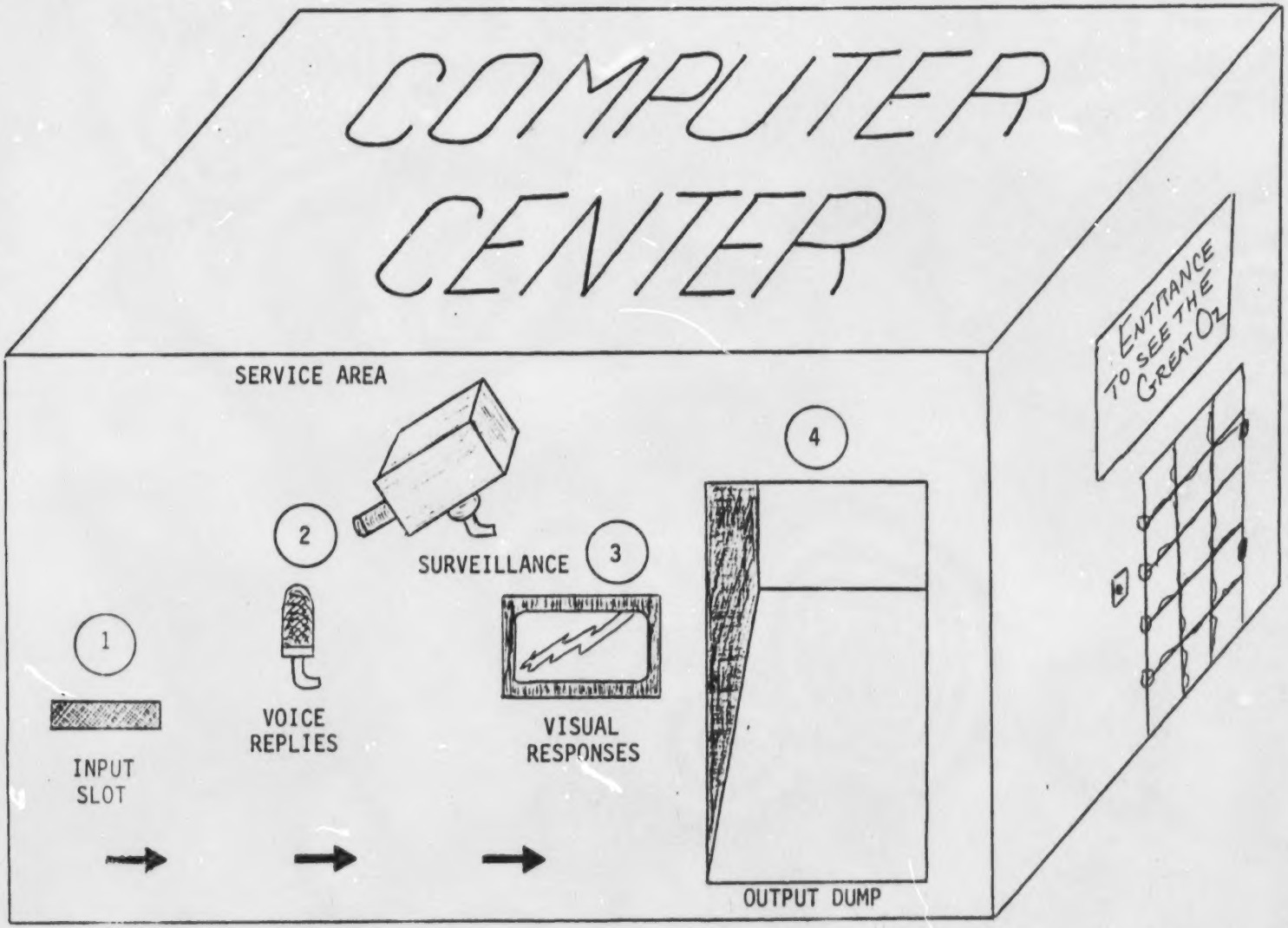
Follow-through is accomplished by receipt of the project's documentation. To guarantee receipt of documentation, be sure to budget for it and acquire a written policy from the computer center in regard to this matter. The policy should state what shall constitute sufficient and adequate documentation for each project category or type. A sample "Program Documentation Checklist" has been included for your information. It is an operational must to have adequate documentation at all levels: programs, operations and systems. Don't stop here! It is advisable that each office or user stay abreast of the changing technologies and techniques within the field of computing. To this end, a small reference library should be acquired and maintained for personal growth. A suggested list of references has been prepared and included within your packets.

As also mentioned, as human beings, we operate best when we can utilize our technical abilities and communication skills through ongoing relationships which are reinforced with the acquisition of a common frame of reference and an empathic understanding of those we must work with and through, to achievement of our common goals.

In summary then, in order to make the most effective and efficient use of the communication elements, relationship building and maintenance processes, and to bring to the forefront our technical abilities, we must clear our communication channels. To accomplish this, we must first put to rest our biases and preconceived notions about computers and their related functions. Then we need to develop an indepth understanding of their functional human parts. At this point, we should attempt to emulate their thinking processes through the completion of our own in-house investigation, and then communicating it, in graphic detail.

Once the thinking, investigating, and communication processes have been brought to bear on the problem, our communications emphasis should be shifted to control and resolution. It should always be kept in mind that the computer field is a highly volatile area and that if we plan to harness its capabilities, or at least strive to keep pace with it, we'll be required to dedicate a certain portion of our daily time-staying up-to-date and knowledgeable!

Are there any questions??



"IS THIS YOUR COMPUTER CENTER"?

Figure 4

Functional Concerns of Computer Personnel

- Key Words -

OPERATOR +	PROGRAMMER +	ANALYST +	MANAGER = CENTER
Instructions	Codes	Addressing	Acquisition
Labels	Debug	Capability	Coordination
Options	Decisions	Capacity	Downtime
Pass Words	Documentation	Data Elements	Funding
*Productivity	*Effectiveness	Development Time	Logistics (Stocks)
Quality	Identification	Duplication	Priorities
Readiness	Instruction Sets	*Efficiency	Support
Steps	Key Words	Layouts	*Timeliness
	Output	Logic	Turnaround
	Procedures	Probability	
	Process	Program Mix	
	Report Generators	Specifications	
	Test Run	Speed-Run Time	
		Systems Approach	
		Systems Libraries	

Figure 5

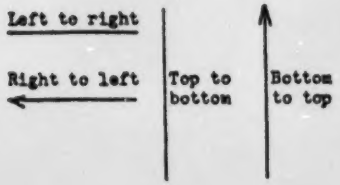
FLOWCHART SYMBOLS

A basic symbol is established for each function which can always be used to represent that function. Specialized symbols are established which may be used in place of a basic symbol to give additional information.

BASIC SYMBOLS

Dimensional ratio
Width: Height = 1: 2/3

Dimensional ratio
Width: Height = 1: 2/3

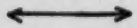


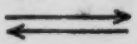
Note The arrowhead is not technically part of the approved USA Standard flowline symbol; however, its use is mandatory when the flow is from right to left or from bottom to top. The use of the arrowhead is optional when the flow is from left to right or from top to bottom.

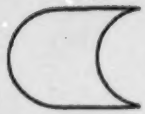
Input/output symbol. The symbol shown represents the input/output (I/O) function, i.e., the making available of information for processing (input) or the recording of processed information (output).

Process symbol. The symbol shown represents the processing function, i.e., the process of executing a defined operation or group of operations resulting in a change in value, form, or location of information or in determining which of several flow directions are to be followed.

Flowline symbol. The symbols shown represent the flow direction function, i.e., the indication of the sequence of available information and executable operations. Flow direction is represented by lines drawn between symbols. Normal direction of flow is from left to right and top to bottom. When the flow direction is not left to right and top to bottom, open arrowheads will be placed on reverse direction flowlines. When increased clarity is desired, open arrowheads can be placed on normal direction flowlines. When flowlines are broken due to page limitation, connector symbols (next to last symbol listed) will be used to indicate the break. When flow is bidirectional, it can be shown by either single or double lines but open arrowheads will be used to indicate both normal direction flow and reverse direction flow. An example is as follows:

Single line 

Double line 



Dimensional ratio
Width: Height = 1:2/3

Dimensional ratio
Width: Height = 1:0.866
Equilateral

Dimensional ratio
Width: Height = 1:2/3

Dimensional ratio
Width: Height = 1:2/3

Dimensional ratio
Width: Height = 1:2/3

Dimensional ratio
Width: Height = 1:1

Dimensional ratio
Width: Height = 1:1

the direction of flow is left to right and top to bottom. Open arrowheads are necessary on symbols for which the flow opposes the above convention. An open arrowhead may also be used on any line when increased clarity will result.

On-line storage symbol. The symbol shown represents an I/O function using auxiliary mass storage of information that can be accessed on-line; e.g., magnetic drums, magnetic disks, magnetic tape strips, automatic magnetic card systems, or automatic microfilm chip or strip systems.

Off-line storage symbol. The symbol shown represents any off-line storage of information, regardless of the medium on which the information is recorded.

Decision symbol. The symbol shown represents a decision or switching type operation that determines which of a number of alternate paths is to be followed.

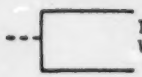
Predefined process symbol. The symbol shown represents a named process consisting of one or more operations or program steps that are specified elsewhere, e.g., subroutine or logical unit.

Manual operation symbol. The symbol shown represents any off-line process geared to the speed of a human being.

Auxiliary operation symbol. The symbol shown represents an off-line operation performed on equipment not under direct control of the central processing unit.

Connector symbol. The symbol shown represents a junction in a line of flow. A set of two connectors is used to represent a continued flow direction when the flow is broken by any limitation of the flowchart. A set of two or more

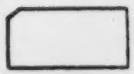
Figure 6a



Dimensional ratio
Width: Height = 1:2/3

Annotation symbol. The symbol shown represents the annotation function, i.e., the addition of descriptive comments or explanatory notes as clarification. The vertical line and the broken line may be drawn either on the left as shown or on the right. It is connected to the flowline at a point where the annotation is meaningful by extending the broken line in whatever fashion is appropriate.

SPECIALIZED SYMBOLS



Dimensional ratio
Width: Height = 1:1/2

Punched card symbol. The symbol shown represents an I/O function in which the medium is punched cards, such as mark sense cards, partial cards, and stub cards.

Dimensional ratio
Width: Height = 1:1

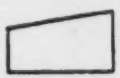
Magnetic tape symbol. The symbol shown represents an I/O function in which the medium is magnetic tape.

Dimensional ratio
Width: Height = 1:1/2

Punched tape symbol. The symbol shown represents an I/O function in which the medium is punched tape.

Dimensional ratio
Width: Height = 1:2/3

Document symbol. The symbol shown represents an I/O function in which the medium is a document.

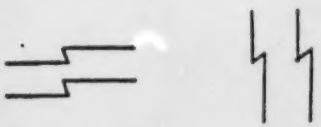


Dimensional ratio
Width: Height = 1:1/2

Manual input symbol. The symbol shown represents an I/O function in which the information is entered manually at the time of processing, by means such as on-line keyboards, switch settings, push buttons, and card readers.

Dimensional ratio
Width: Height = 1:2/3

Display symbols. The symbol shown represents an I/O function in which the information is displayed for human use at the time of processing, by means such as on-line indicators, video devices, console printers, and plotters.



Communication link symbol. The symbol shown represents an I/O function in which information is transmitted automatically from one location to another. Unless otherwise indicated,

connectors is used to represent the junction of several flowlines with one flowline, or the junction of one flowline with one of several alternate flowlines.

Dimensional ratio
Width: Height = 1:3/8

Terminal symbol. The symbol shown represents a terminal point in a system or communication network at which data can enter or leave; e.g., start, stop, halt, delay, or interrupt.

Figure 6b

DECISION TABLES

ORIGINAL NARRATIVE

WHEN THE QUANTITY ORDERED FOR A PARTICULAR ITEM DOESN'T EXCEED THE ORDER LIMIT AND THE CREDIT APPROVAL IS OK, MOVE THE QUANTITY ORDERED AMOUNT TO THE QUANTITY SHIPPED FIELD. THEN GO TO A TABLE TO PREPARE A SHIPMENT RELEASE. OF COURSE, THERE MUST BE A SUFFICIENT QUANTITY ON HAND TO FILL THE ORDER.

WHEN THE QUANTITY ORDERED EXCEEDS THE ORDER LIMIT, GO TO A TABLE NAMED ORDER REJECT. DO THE SAME IF THE CREDIT APPROVAL IS NOT OK.

OCCASIONALLY, THE QUANTITY ORDERED DOESN'T EXCEED THE ORDER LIMIT, AND CREDIT APPROVAL IS OK, BUT THERE IS INSUFFICIENT QUANTITY ON HAND TO FILL THE ORDER. IN THIS CASE, GO TO A TABLE NAMED BACK ORDER.

UNDERLINED VERSION

WHEN THE QUANTITY ORDERED FOR A PARTICULAR ITEM DOESN'T EXCEED THE ORDER LIMIT AND THE CREDIT APPROVAL IS OK, MOVE THE QUANTITY ORDERED AMOUNT TO THE QUANTITY SHIPPED FIELD. THEN GO TO A TABLE TO PREPARE A SHIPMENT RELEASE. OF COURSE, THERE MUST BE A SUFFICIENT QUANTITY ON HAND TO FILL THE ORDER.

WHEN THE QUANTITY ORDERED EXCEEDS THE ORDER LIMIT, GO TO A TABLE NAMED ORDER REJECT. DO THE SAME IF THE CREDIT APPROVAL IS NOT OK.

OCCASIONALLY, THE QUANTITY ORDERED DOESN'T EXCEED THE ORDER LIMIT, AND CREDIT APPROVAL IS OK, BUT THERE IS INSUFFICIENT QUANTITY ON HAND TO FILL THE ORDER. IN THIS CASE, GO TO A TABLE NAMED BACK ORDER.

LIMITED ENTRY TABLE		RULE 1	RULE 2	RULE 3	RULE 4
01	Qty. ordered ≤ order limit	Y	N	Y	Y
02	Credit approval = OK	Y		N	Y
03	Qty. on hand ≥ qty. ordered	Y			N
04	Move qty. ordered to qty. shipped	X			
05	Go to release	X			
06	Go to order reject		X	X	
07	Go to back order				X

Fig. 6-F. Preparing a decision table from a narrative

ORIGINAL DECISION TABLE	Rules			
	1	2	3	4
Is condition 1 satisfied?	Y	Y	Y	N
Is condition 2 satisfied?	Y	—	N	—
Is condition 3 satisfied?	N	Y	N	—
Perform action in table	A	B	C	D

Same logic as program flowchart (one possible version)

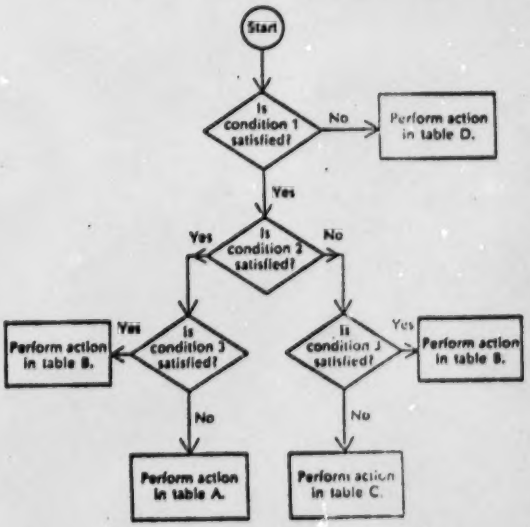


Figure 7

UNIVERSITY OF SOUTHERN MISSISSIPPI

ADMINISTRATIVE DATA PROCESSING

REQUEST FORM

Date of Request: _____ Date Required _____

Requested by: _____ _____ _____

Department Person Phone

Disposition of Output: _____

Description of Output:

Sequence: Alphabetical or Numerical or _____

Circle One

Form of Outout: Printed, Punch Card, or _____

Number of Copies Needed: _____

Size of Paper: 8½ x 11, 14 x 11, or _____

If other than stock paper, describe form _____

If Print Out — List information needed from left to right (if not a developed program).

_____

_____

_____

Data Processing Use Only

Program No. _____ Carriage Control _____

Instructions: _____

_____

_____

_____

Disposition of Output: _____

_____

_____

Figure 8

Job Performed by: _____ Approved _____

Date Completed: _____ Date: _____

PROGRAM DOCUMENTATION

CHECKLIST

A. PROGRAM NUMBER _____ C. JOB REQUEST NUMBER _____

B. PROGRAM NAME _____ D. PROGRAMMER _____

COMPLETION DATE

_____ E. PROGRAM NARRATIVE (FORM MIS-0004)

_____ F. HIERARCHY DIAGRAM

_____ G. SYSTEM FILE LAYOUTS

_____ H. PRINT LAYOUTS (FORM IBM-GX20-1816)

_____ I. SCREEN LAYOUTS

_____ J. SAMPLE REPORT

_____ K. LISTING OF FINAL TESTED PROGRAM

_____ L. CONTROL CARD

_____ M. CONSOLE MESSAGES

_____ N. SPECIAL CONSIDERATIONS

_____ O. REQUEST FOR SERVICES (FORM MIS-0002)

_____ P. USER ACCEPTANCE

_____ Q. SAMPLE EXECUTE DECK

_____ R. HISTORY OF REVISIONS (FORM MIS-0005)

DOCUMENTATION APPROVED BY PROJECT LEADER _____ DATE _____

PROJECT DEVELOPMENT MANAGER _____ DATE _____

Figure 9

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